



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/033,446	12/27/2001	Shirou Yoshioka	10873.810US01	9320

7590 07/08/2004  
Merchant & Gould P.C.  
P.O. Box 2903  
Minneapolis, MN 55402-0903

EXAMINER

KIM, KENNETH S

ART UNIT	PAPER NUMBER
----------	--------------

2111

DATE MAILED: 07/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/033,446	<b>Applicant(s)</b> YOSHIOKA, SHIROU	
	<b>Examiner</b> Kenneth S KIM	<b>Art Unit</b> 2111	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

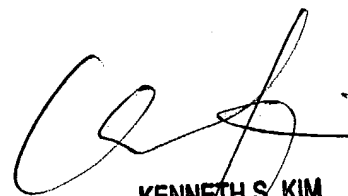
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 December 2001.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 2-4, 6-8, 10-12, 14-16, 18-20 and 22-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1, 5, 9, 13, 17 and 21 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

  
**KENNETH S. KIM**  
PRIMARY EXAMINER

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>04/09/02</u> | 6) <input type="checkbox"/> Other: _____  |

1. Claims 1, 5, 9, 13, 17, 21 have been elected for examination, and Claims 2-4, 6-8, 10-12, 14-16, 18-20, and 22-24 remain non-elected.

2. Applicant is requested to provide an explanation in the specification as to the meaning of "limited" as applied to an instruction and how the instruction following a limited conditional branch instruction gets stored in the dedicated register.

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1, 5, 9, 13, 17, and 21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(a) Claim 1, it is not clear what is meant by "a limited conditional branch instruction whose instruction to be executed next when the branch prediction is not *hit* is *limited*".

(b) Claim 1, it is not clear what is meant by "branch is not *approved* in decode stage".

(c) Claim 1, it is not clear from the recited limitations how "a fetch stage and decode stage for the next instruction to be executed are conducted in fewer machine cycles than required for a fetch and a decode stage for a normal instruction". It is not clear what is a normal instruction and how many cycles a fetch stage and a decode stage for a normal instruction requires.

(d) Claims 5, 13, and 17, the same as (a) to (c).

Art Unit: 2111

(e) Claims 9 and 21, the same as (a) and (c) for limited unconditional branch instruction.

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

6 Claims 1, 5, 9, 13, 17, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Caulk, Jr., U.S. Patent No. 5,737,562.

Caulk, Jr. teaches the invention as claimed in claim 1 including a microprocessor having a branch prediction that the branch will be approved (col. 3, line 29),

(a) employing a limited conditional branch instruction whose instruction to be executed next when the branch prediction is not hit (col. 3, line 36) is limited,

(b) wherein, if it is detected that the branch is not approved in decode and execution stage for the limited conditional branch instruction (col. 3, line 36), a fetch stage and decode stage for the next instruction to be executed are conducted in a fewer machine cycles than required for a fetch stage and a decode stage for a normal instruction (col. 1, line 36).

Art Unit: 2111

The method claim 13 is equivalently rejected based on the same reason. The processor claim 9 and the method claim 21 for the processing of a limited unconditional branch instruction are equivalently rejected for the unconditional branch instruction is equivalent to that of a predicted taken and approved (col. 3, line 34) conditional branch instruction.

7 Claims 1, 5, 9, 13, 17, and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by Muhich et al, EPO Patent Application Publication No. 0 592 125 A1.

Muhich et al teaches the invention as claimed in claim 1 (or 5) including a microprocessor having a branch prediction that the branch will be approved (col. 5, line 48) or not approved (col. 5, line 39),  
(a) employing a limited conditional branch instruction whose instruction to be executed next when the branch prediction is not hit (col. 5, lines 52 or 43) is limited,  
(b) wherein, if it is detected that the branch is not approved in decode and execution stage for the limited conditional branch instruction (col. 5, line 52; or approved, line 43), a fetch stage and decode stage for the next instruction to be executed are conducted in a fewer machine cycles than required for a fetch stage and a decode stage for a normal instruction (col. 5, line 33).

The method claims 13 and 17 are equivalently rejected based on the same reason. The processor claim 9 and the method claim 21 for limited unconditional branch instruction are equivalently rejected for the processing of a unconditional branch instruction is equivalent to that of a predicted taken and approved (col. 5, line 51) conditional branch instruction.

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Kacevas taught a method of minimizing branch mispredict recovery delay using side memory to store mispredicted path results.

Rakvic et al taught a method of fetching mispredicted branch in the next clock cycle.

Hoyt et al taught a method of fetching next instruction to mispredicted taken or not taken branches.


9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kenneth S KIM whose telephone number is (703) 305-9693. The examiner can normally be reached on M-F (8:30-17:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached on (703) 305-4815. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9306 for regular communications and (703) 872-9306 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

\*\*\*

July 1, 2004

  
KENNETH S. KIM  
PRIMARY EXAMINER